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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,309	ABRAHAM ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,15,17-19 and 21* is/are rejected.

7)☒ Claim(s) *12 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02/06/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed on 11/13/2007 has been entered. Claims 1-21 are pending in this Office action.

Response to Arguments

2. Applicant's arguments, see Applicants' Remarks, filed on 11/13/2008, with respect to the rejection(s) of claim(s) 1-12, 14-15 and 17-21 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sanders U.S. 6,970,500 B1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7-9, 11, 13-15, 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders U.S. 6,970,500 B1 in view of admitted prior art.

Regarding claim 1, Sanders invention is directed to method and apparatus for determining timing of data bit transitions in a direct sequence spread spectrum signal after frequency and code phase of the signal are known. ***Sanders teachings'***

advantage is that data bit transitions can be determined for weak incoming signals.

In column 4 lines 15-55, Sanders discloses a spread spectrum signal receiver including data bit transition detector 36 uses the relative strengths of the integrations for determining the timing of the data bit transitions of the incoming signal. The navigation processor 38 uses information from the correlation machine 20, the signal processor 32 and the data bit transition detector 36 for determining the information in the data bits, and determining location and velocity of the antenna 12. In view of the above, the fore going teachings correspond of the claimed step of "estimating first bit-transitions".

In column 4 line 65 via column 5 line 30, FIG. 2A discloses the data bit accumulator 30 for providing absolute values (unsigned values) of I and Q accumulations for accumulation time periods equal to the data bit time period. The code time period accumulator 42 provides I and Q code accumulations of the correlation between I and Q components *of the local spread spectrum signal from the local generator 22 and I and Q components of the representation of the incoming signal samples* from the frequency downconverter 14 (or signal memory 28) in repetitive time periods of the spreading code of the incoming signal. Because Sanders' method is to determine timing of data bit transitions, one of ordinary skill in the art at the time the invention was made would have recognized that the correlation process is performed on the data bit transitions. ***Further disclosed in column 3 lines 60-67, Sanders teaches that the local generator 22 generates a local spread spectrum signal in the same format as the I and Q samples of the incoming spread spectrum signal***. In view of

that, the local spread spectrum corresponds to the claimed bit pattern and the correlation process corresponds to the claimed step of "comparing first bit-transitions with second bit-transitions".

Sanders discusses GPS navigation data bits, in general, including HOW, TOW ... Sanders, however, does not specifically discuss the navigation data bits including preamble and extended preamble, which comprises a set of expected data bits within the satellite navigation data broadcast by the satellites 212 and in one embodiment, the extended preamble may include expected data bits for one or more of the TLM message 114, the reserved bits 116, the parity bits 118, the TOW-count message 120, the alert flag 122, the anti-spoof flag 124, the sub-frame ID 126, and the parity bits 128 as claimed by Applicants in the original disclosure; see paragraph [0033] of the original disclosure.

Nevertheless, the GPS navigation message inherently includes the extended preamble as disclosed in paragraph [0009] of the original disclosure. Because the correlation process as recited above is performed on the incoming signal samples, one of ordinary skill in the art at the time the invention was made to modify Sanders local spread spectrum signal generator 22 to generate local spread spectrum signal including preamble and extended preamble for performing the correlation process.

Regarding claim 2, as recited in claim 1 rejection, Sanders invention is directed to method and apparatus for determining timing of data bit transitions in a direct

sequence spread spectrum signal after frequency and code phase of the signal are known.

Regarding claim 3, in column 1 lines 45-55, Sanders discusses the GPS receiver reads time of week (TOW) in the GPS data bits in the HOW to learn a GPS-based clock time accurate to about 20 milliseconds.

Regarding claim 4, as recited in claim 1 rejection, the data bit transition detector 36 uses the relative strengths of the integrations for determining the timing of the data bit transitions of the incoming signal. Because the local generator 22 (shown in FIG. 1) generates a local spread spectrum signal in the same format as the I and Q samples of the incoming spread spectrum signal, the local generator 22 obtains a timing estimate and generate a spread spectrum signal including preamble and extended preamble as claimed.

Regarding claim 5, because the local generator 22 (shown in FIG. 1) generates a local spread spectrum signal in the same format as the I and Q samples of the incoming spread spectrum signal, the local generator 22 generates bits of TOW as claimed.

Regarding claim 7, in column 1 lines 30-40, Sanders discusses the GPS receiver is first turned on, it knows its own approximate location, an approximate clock time, and

almanac or ephemeris information for the locations-in-space of the GPS satellites as a function of clock time. In view of that, the GPS receiver includes its own clock.

Regarding claim 8, in column 1 lines 30-50, Sanders discusses that the GPS receiver is first turned on, it knows its own approximate location, an approximate clock time, and almanac or ephemeris information for the locations-in-space of the GPS satellites as a function of clock time. The GPS receiver processes *the approximate clock time*, its approximate location, and the almanac or ephemeris information to determine which of the GPS satellites should be in-view; and generates one or more local GPS signals having carrier frequencies and pseudorandom noise (PRN) codes matching the estimated Doppler-shifted frequencies and the PRN codes of one or more of the in-view GPS satellites. In view of that, the approximate clock time is computed as art of the navigation solution.

Regarding claim 9, as recited in claim 1 rejection, data bit transition detector 36 uses the relative strengths of the integrations for determining the timing of the data bit transitions of the incoming signal. The navigation processor 38 uses information from the correlation machine 20, the signal processor 32 and the data bit transition detector 36 for determining the information in the data bits, and determining location and velocity of the antenna 12. The local generator 22 (shown in FIG. 1) generates a local spread spectrum signal in the same format as the I and Q samples of the incoming spread

spectrum signal. In view of that, the local spread spectrum signal would includes a TLM and a HOW since they are part of the GPS navigation data bits.

Regarding claim 11, the claimed features are standard part of GPS navigation data bits as disclosed in paragraph [0010] of the original disclosure.

Regarding claim 13, Sanders discloses in FIG. 3A is a time chart showing variable start times for the correlation machine of FIG. 2A. In view of that, FIG. 3A corresponds to the claimed mask.

Regarding claim 14, in column 1 lines 30-50, Sanders discusses that the GPS receiver processes the approximate clock time, its approximate location, and the almanac or ephemeris information to determine which of the GPS satellites should be in-view; and generates one or more local GPS signals having carrier frequencies and pseudorandom noise (PRN) codes matching the estimated Doppler-shifted frequencies and the PRN codes of one or more of the in-view GPS satellites. The GPS receiver mixes the incoming GPS signal to a Doppler-shifted baseband; correlates the baseband with the PRN code and a PRN code phase of the local GPS signal; and then accumulates the correlations. The process of correlation and accumulation may need to be repeated many times until a correlation level is found that exceeds a correlation threshold indicating GPS signal acquisition. In view of that, the step of accumulating corresponds to the claimed integrating.

Regarding claim 15, Sanders does not expressly disclose estimating the frequency error as claimed in the application claim.

However, Sanders method is to determine timing of data bit transitions in a direct sequence spread spectrum signal after frequency and code phase of the signal are known. FIG. 3A is a time chart showing variable start times for the correlation machine of FIG. 2A. The timing offset is directly related to the frequency error as appreciated by one of ordinary skill in the art. In column 11, lines 1-10, Sanders teaches the step of determining actual said data bit transition times from a certain one of said first through Nth assumed data bit transition times corresponding to a largest one of said first through Nth integrations. In another words, the process includes correcting the frequency error via the step of determining actual said data bit transition times from a certain one of said first through Nth assumed data bit transition times.

Regarding claim 17, claim is rejected on the same ground as for claim 1 because of similar scope. Furthermore, see FIG. 1, in column 4 lines 25-45, Sanders discloses that the memory 24 includes a signal processor 32, a multibit accumulator 34, a data bit transition detector 36, and a navigation processor 38. The microprocessor 26 including accessory hardware reads the programmed instructions and data, and writes data to the memory 24 in a conventional manner for controlling the elements of the receiver 10. The signal processor 32 includes data and program instructions for closing carrier and code loops with the correlation machine 20 and local generator 22 for acquiring and tracking the incoming signal.

Regarding claim 18, as recited in claim 8 rejection, the GPS receiver is first turned on, it knows its own approximate location, an approximate clock time, and almanac or ephemeris information for the locations-in-space of the GPS satellites as a function of clock time. Hence, the GPS receiver includes an internal clock. Furthermore, Sanders method is to determine timing of data bit transitions in a direct sequence spread spectrum signal after frequency and code phase of the signal are known.

Regarding claim 19, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 21, claim is rejected on the same ground as for claim 6 because of similar scope.

4. Claims 6, 10, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders U.S. 6,970,500 B1 and admitted prior art as applied to claims 4, 9 and 17 above, and further in view of Heitmann U.S. Patent 7,190,703 B1.

Regarding claim 6, Sanders does not disclose the time estimate is obtained from a server as set forth in the application claim.

Heitmann invention is directed to facilitate the synchronization of base stations in a mobile communication network by using time information server. In column 4 lines 20-30, Heitmann teaches in FIG. 1 a switching device VE is connected to the landline network FN via a landline network interface FNS, and is connected to the local area network LAN via a network interface NS. The switching device VE also has a real-time

clock RTC, and also has a GPS (Global Positioning System) receiver GPS for receiving world time information from a satellite SAT. In column 5 lines 20-25, the switching device VE thus carries out the function of a time information server in the local area network LAN.

As disclosed in column 2 lines 20-31, because Heitmann teachings allow base stations to be synchronized with complex communications networks with little effort using time information server, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Abraham et al. teachings to obtain time information from a server.

Regarding claim 10, claim is rejected on the same ground as for claim 6 because of similar scope.

Regarding claim 20, claim is rejected on the same ground as for claim 6 because of similar scope. Furthermore

Allowable Subject Matter

5. Claims 12 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Olaker U.S. Patent 7,191,385 B2.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

KHANH C. TRAN
PRIMARY EXAMINER

1/18/2008
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